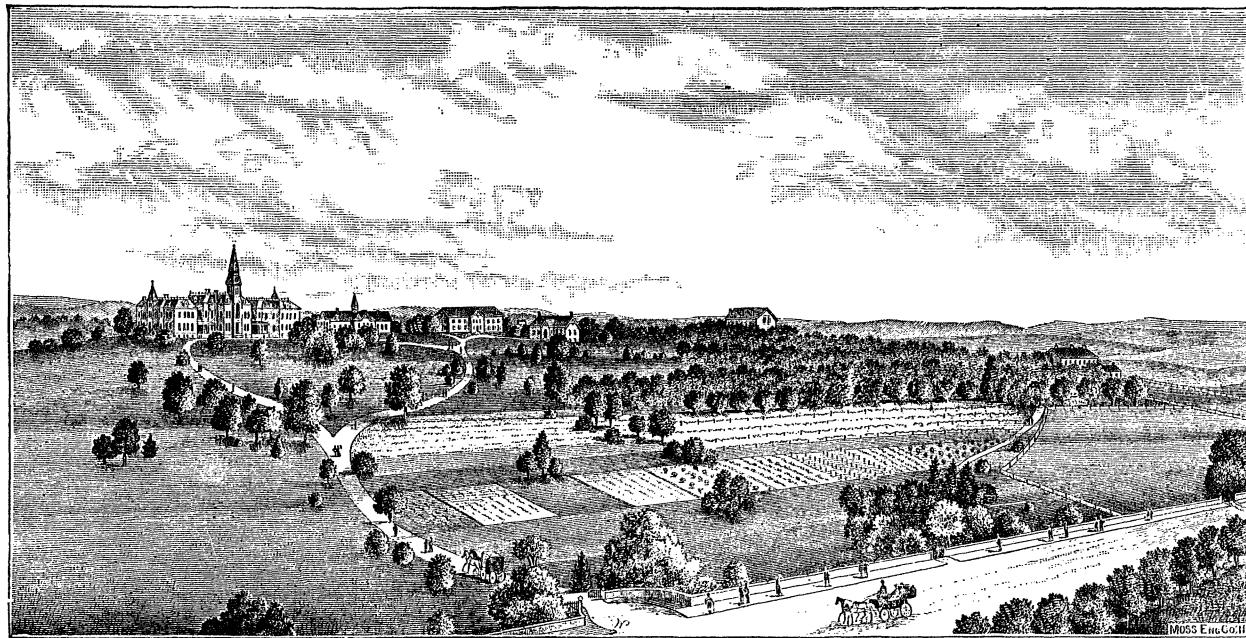


CATALOGUE
OF THE
State Agricultural College

OF
KANSAS.

1882-83.



KANSAS STATE AGRICULTURAL COLLEGE.

M183 E.H.C. Co. 118

TWENTIETH

ANNUAL CATALOGUE

OF THE

OFFICERS AND STUDENTS

OF THE

State Agricultural College

OF

KANSAS.

1882-83.

MANHATTAN, KANSAS:
PRINTING DEPARTMENT, AGRICULTURAL COLLEGE.
1883.

Board of Regents.

HON. F. D. COBURN, Wyandotte, Wyandotte Co.,
President.

HON. CHAS. E. GIFFORD, Clay Center, Clay Co.,
Vice-President.

HON. J. T. ELLICOTT, Manhattan, Riley Co.,
Treasurer.

HON. H. C. KELLERMAN, Burlington, Coffey Co.

REV. PHILIP KROHN, Atchison, Atchison Co.

HON. C. A. LELAND, El Dorado, Butler Co.

PRESIDENT GEO. T. FAIRCHILD (*ex officio*),
Secretary.

L. R. ELLIOTT, *Land Agent,* }
M. L. WARD, *Loan Commissioner,* } Manhattan, Riley Co.

Faculty.

GEORGE T. FAIRCHILD, A. M., PRESIDENT,
Professor of Logic and Political Economy.

MILAN L. WARD, A. M.,
Professor of Mathematics and Engineering.

EDWARD M. SHELTON, M. S.,
Professor of Agriculture, Superintendent of Farm.

GEORGE H. FAILYER, M. S.,
Professor of Chemistry and Physics.

EDWIN A. POPENOE, A. M.,
*Professor of Botany and Zoology, Superintendent of Orchards
and Gardens.*

JEREMIAH E. PLATT, A. M.,
Professor of Elementary English and Mathematics.

ALBERT TODD, A. M., LIEUT. 1ST U. S. ART'Y,
Professor of Military Science and Tactics.

JOHN D. WALTERS,
Instructor in Industrial Drawing.

WILLIAM H. COWLES, A. B.,
Instructor in English and History.

IRA D. GRAHAM,
Superintendent of Telegraphy, Secretary.

GEORGE F. THOMPSON,
Superintendent of Printing.

MRS. NELLIE S. KEDZIE, M. S.,
Teacher of Household Economy and Hygiene, Superintendent of Sewing.

STATE AGRICULTURAL COLLEGE.

MARK A. REEVE,
Acting Superintendent of Workshops.

WILLIAM L. HOFER,
Teacher of Instrumental Music.

WILLIAM H. COWLES, *Acting Librarian.*

FOREMEN.

EDWIN GREGORY, *Farm.*

AARON WINDER, *Gardens.*

STUDENT ASSISTANTS.

JULIUS T. WILLARD, *Chemistry.*

JACOB LUND, *Blacksmithing.*

Students.

FOURTH YEAR.

James W. Berry,	*Jewell City, Jewell.
Mary C. Bower,	Manhattan, Riley.
Lewis W. Call,	Wild Cat, Riley.
Emma Glossop,	Manhattan, Riley.
William J. Griffing,	Manhattan, Riley.
Phœbe E. Haines,	Manhattan, Riley.
Hortense L. Houston,	Manhattan, Riley.
Jacob Lund,	Alma, Wabaunsee.
Katie I. Meguire,	Manhattan, Riley.
J. Dana Needham,	Lane, Franklin.
Milan T. Ward,	Orion, Henry Co., <i>Illinois</i> .
Julius T. Willard,	Wabaunsee, Wabaunsee.

THIRD YEAR.

Emert S. Andress,	Hanover, Washington.
Charlotte Blain,	Manhattan, Riley.
Florence J. Brous,	Manhattan, Riley.
Bartholomew Buchli,	Alma, Wabaunsee.
John H. Calvin,	Manhattan, Riley.
William A. Corey,	Plowboy, Shawnee.
Albert Deitz,	Kansas City, Wyandotte.
Carrie F. Donaldson,	Manhattan, Riley.
Florence Donaldson,	Manhattan, Riley.
Frank W. Dunn,	Goshen, Elkhart Co., <i>Indiana</i> .
Edwin M. Fairchild,	Manhattan, Riley.
I. Day Gardiner,	Wakarusa, Shawnee.
Lydia P. Gardiner,	Wakarusa, Shawnee.
Mary Griffing,	Manhattan, Riley.
Abraham L. Helmick,	Manhattan, Riley.
Eli A. Helmick,	Manhattan, Riley.
Franklin A. Hutto,	Manhattan, Riley.

* Postoffice and county. State in Italics.

Edwin H. Kern,	Ionia, Jewell.
Issie Lewis,	Manhattan, Riley.
Marion M. Lewis,	Stockdale, Riley.
John Linder,	Manhattan, Riley.
Anna A. Marshall,	Manhattan, Kiley.
George G. McConnell,	Menoken, Shawnee.
Hattie L. Peck,	Junction City, Davis.
George C. Peck,	Junction City, Davis.
Roscius K. Peck,	Junction City, Davis.
Elias L. Pound,	Manhattan, Riley.
May V. Quinby,	Wakefield, Clay.
Dorothea E. C. Secrest,	Randolph, Riley.
John W. Shartel,	Fulda, Chautauqua.

SECOND YEAR.

Mary M. Akin,	Manhattan, Riley.
Valdy V. Akin,	Manhattan, Riley.
Dustin Avery,	Wakefield, Clay.
Thomas Bassler,	Philadelphia, <i>Pennsylvania</i> .
Benjamin B. Bayles,	Manhattan, Riley.
Harvey O. Benedict,	Bennington, Ottawa.
Frank S. Bishop,	Delphos, Ottawa.
Inez Bishop,	Delphos, Ottawa.
Jasper E. Brady, jr.,	Leavenworth, Leavenworth.
George H. Brown,	Wakefield, Clay.
George A. Browning,	Manhattan, Riley.
Victor H. Calvin,	Manhattan, Riley.
Clara F. Castle,	Manhattan, Riley.
Lizzie A. Clarke,	Newport, <i>Rhode Island</i> .
Annie M. Cowell,	Wakefield, Clay.
Judson H. Criswell,	Manhattan, Riley.
Edwin J. Davies,	Bala, Riley.
Alvin J. Donaldson,	Chelsea, Butler.
William M. Ellis,	Minerva, Labette.
Milton T. Evans,	Sedan, Chautauqua.
Clarence Fairman,	Wakefield, Clay.
Julia C. Finney,	Wamego, Pottawatomie.
George A. Giles,	Irving, Marshall.
Frederick W. Guy,	Wakefield, Clay,
Percy S. Haynes,	Rockville, Bates Co., <i>Missouri</i> .
John U. Higinbotham,	Manhattan, Riley.
Florence F. Hough,	Melrose, Monroe Co., <i>Iowa</i> .
John G. S. Hubbard,	Caton, Steuben Co., <i>New York</i> .

David R. Jenkins,	Bala, Riley.
Ione M. Kinney,	Manhattan, Riley.
Allan Lewis,	Topeka, Shawnee.
Georgia I. Long,	Ellsworth, Ellsworth.
Ernest McDonald,	Manhattan, Riley.
Jessie F. McDonald,	Manhattan, Riley.
James W. McDonald,	Manhattan, Riley.
David J. Moore,	Idana, Clay.
Jennie Morrow,	Moline, Elk.
Mary E. Moses,	Manhattan, Riley.
Nellie J. Murphy,	Tabor, Clay.
Thomas W. Nicol,	Poplar Hill, Dickinson.
Arthur L. Noyes,	Pavilion, Wabaunsee.
Charles L. Parker,	Kansas City, Missouri.
Louis B. Parker,	Manhattan, Riley.
Seward N. Peck,	Junction City, Davis.
Henry C. Peoples,	Eskridge, Wabaunsee.
Julia E. Points,	Havensville, Pottawatomie.
Clarence D. Pratt,	Silver Lake, Shawnee.
Ada H. Quinby,	Wakefield, Clay.
Ida A. Quinby,	Wakefield, Clay.
Horace Randal,	Fort Union, New Mexico.
Rollin R. Rees,	Minneapolis, Ottawa.
Horace M. Robbins,	St. John, Stafford.
Andrew A. Sebring,	Bismarck, Wabaunsee.
Frank M. Smith,	Rosevale, Clay.
Stephen A. Smith,	Strawn, Coffey.
Wesley R. Wharton,	Burlington, Coffey.
William W. Wightman,	Logan, Phillips.
David Wishart,	Pawnee City, Pawnee Co., Nebraska.
Grace Wonsetler,	Verbeck, Barton.
Effie E. Woods,	Randolph, Riley.

FIRST YEAR.

Clemeth H. Abercrombie,	Saltville, Mitchell.
Caddie M. Abbott,	Manhattan, Riley.
Fannie M. Acton,	Nelson Center, Cloud.
Scott E. Acton,	Nelson Center, Cloud.
Ulysses G. Allen,	Manhattan, Riley.
Albert L. Anderson,	Blendon, Sedgwick.
Elmer D. Anderson,	Louisville, Pottawatomie.
John B. Anderson,	Manhattan, Riley.
Luella A. Anderson,	Manhattan, Riley.

William D. Auld,	. . . . .	Frankfort, Marshall.
Cyrus D. Austin,	. . . . .	Melvern, Osage.
Hall C. Austin,	. . . . .	Melvern, Osage.
Bertha H. Bacheller,	. . . . .	Ellinwood, Barton.
Edwin B. Bacheller,	. . . . .	Ellinwood, Barton.
Annie A. Barnes,	. . . . .	Manhattan, Riley.
George H. Barnes,	. . . . .	Manhattan, Riley.
Lavina Barnes,	. . . . .	Delphos, Ottawa.
David P. Barry,	. . . . .	Ellinwood, Barton.
Herbert W. Batchellor,	. . . . .	Wakefield, Clay.
Elmer E. Bates,	. . . . .	Rural, Jefferson.
Lydia J. Bayles,	. . . . .	Manhattan, Riley.
Calbert H. Beach,	. . . . .	Moline, Elk.
Lucy A. Beach,	. . . . .	Moline, Elk.
George W. Beeler,	. . . . .	Junction City, Davis.
William O. Benson,	. . . . .	Assaria, Saline.
Allie O. Biddle,	. . . . .	Silver Lake, Shawnee.
Frederick Bohnenblust,	. . . . .	Alida, Davis.
Charles E. Boyer,	. . . . .	WaKeeney, Trego.
Melvin Boyles,	. . . . .	North Cedar, Jackson.
Julius Brandner,	. . . . .	Atchison, Atchison.
Emory T. Brannan,	. . . . .	Parsons, Labette.
Irene Bridgman,	. . . . .	Atchison, Atchison.
Lillie B. Bridgman,	. . . . .	Atchison, Atchison.
Etta E. Brown,	. . . . .	Carbondale, Osage.
Eva Brown,	. . . . .	Excelsior, Richland Co., Wisconsin.
Joseph S. Brown,	. . . . .	Weston, Davis.
Edward W. Browning,	. . . . .	Hamlin, Brown.
Gertrude Browning,	. . . . .	Hamlin, Brown.
Abraham L. Brubaker,	. . . . .	McPherson, McPherson.
Fidelia Brumbaugh,	. . . . .	Madison, Greenwood.
Lafayette Brumbaugh,	. . . . .	Madison, Greenwood.
Samuel H. Carnahan,	. . . . .	Garrison, Pottawatomie.
Mary E. Christensen,	. . . . .	Mariadahl, Pottawatomie.
Walter P. Chisum,	. . . . .	Roswell, Lincoln Co., New Mexico.
William J. Chisum,	. . . . .	Roswell, Lincoln Co., New Mexico.
DeEtta A. Clark,	. . . . .	Delphos, Ottawa.
Ezra S. Clarke,	. . . . .	Manhattan, Riley.
Hattie P. Clarke,	. . . . .	Manhattan, Riley.
Ernest B. Coffman,	. . . . .	Mankato, Jewell.
Edgar B. Colburn,	. . . . .	Manhattan, Riley.
Louis H. Cool,	. . . . .	Cool, Cloud.
William E. Cooper,	. . . . .	Wild Cat, Riley.
Della M. Copeland,	. . . . .	Clay Center, Clay.
Edward Corbett,	. . . . .	Bryan, Williams Co., Ohio.
Nellie C. Cottrell,	. . . . .	Wabaunsee, Wabaunsee.
David A. Curl,	. . . . .	Hiawatha, Brown.
Charles R. Dalton,	. . . . .	Lansing, Leavenworth.

Lizzie J. Davies,	Bala, Riley.
Clarence E. Dawson,	Nelson, Cloud.
Mary Dillon,	Glasco, Cloud.
Edward H. Dixon,	Wamego, Pottawatomie.
Fannie M. Dorman,	Wabaunsee, Wabaunsee.
James H. Dutton,	Clyde, Cloud.
Robbie C. Edgington,	Morse, Johnson.
John E. Elliot,	Manhattan, Riley.
Bert R. Elliott,	Manhattan, Riley.
Frederick R. Elliott,	Manhattan, Riley.
Alberta M. Embry,	Ottawa, Franklin.
Ernest H. Embry,	Ottawa, Franklin.
Issola I. Embry,	Ottawa, Franklin.
John M. Erwin,	Hiawatha, Brown.
Harry P. Ewalt,	WaKeeney, Trego.
Paul H. Fairchild,	Manhattan, Riley.
Josie E. Ferguson,	Manhattan, Riley.
Alpheus D. Fink,	Jewell City, Jewell.
Henry W. Gahan,	Manhattan, Riley.
Linna A. Gahan,	Manhattan, Riley.
Ernest A. Gardiner,	Wakarusa, Shawnee.
Hugh C. Gaston,	Mankato, Jewell.
Flora B. Gates,	Columbus, Cherokee.
Henry H. Geyer,	Robinson, Brown.
Hattie M. Gifford,	Milford, Davis.
Sanford F. Giles,	Irving, Marshall.
Mary Glossop,	Manhattan, Riley.
I. Ruth Goheen,	Manhattan, Riley.
Abbott M. Green,	Oberlin, Decatur.
Alice M. Green,	Manhattan, Riley.
George A. Griffes,	Irving, Marshall.
George F. Guy,	Wakefield, Clay.
Lavona Hamilton,	Winterset, Madison Co., <i>Iowa</i> .
May B. Hammett,	Columbus, Cherokee.
James G. Harbord,	Manhattan, Riley.
Nellie M. Harper,	Manhattan, Riley.
William F. Heiser,	Alida, Davis.
Charles L. Helmick,	Hico, Benton Co., <i>Arkansas</i> .
Mary Hinman,	Manhattan, Riley.
Charles J. Hooper,	Silver Cliff, Custer Co., <i>Colorado</i> .
Seth M. Houser,	Minneapolis, Ottawa.
LaBlanche Houston,	Manhattan, Riley.
Thomas V. Howe,	Chapman, Dickinson.
Philip A. Huber,	Meriden, Jefferson.
Robert Hulse,	Junction City, Davis.
Elijah C. Hunter,	Morse, Johnson.

William F. Hunter,	Concordia, Cloud.
Gertrude M. Huntington,	Manhattan, Riley.
Laura C. Huntington,	Manhattan, Riley.
Edgar A. Hutto,	Manhattan, Riley.
Willis W. Hutto,	Manhattan, Riley.
Hubert H. Hyner,	North Topeka, Shawnee.
Eva H. Ingraham,	Manhattan, Riley.
Carrie V. Ingraham,	Manhattan, Riley.
Marlow W. Ingraham,	Manhattan, Riley.
Mathew Jaggar,	Danville, DesMoines Co., <i>Iowa</i> .
Charles E. Janeway,	Glen Elder, Mitchell.
Charles B. Jennings,	North Topeka, Shawnee.
Wallace L. Junkins,	Burlington, Coffey.
Arthur B. Kauffman,	Garnett, Anderson.
George L. Keener,	Industry, Clay.
Edia L. King,	Manhattan, Riley.
Alma P. Knowles,	Delphos, Ottawa.
Chase L. Knowles,	Delphos, Ottawa.
Mary Kokanour,	Clay Center, Clay.
Peter M. Kokanour,	Clay Center, Clay.
Marcus Krotzer,	Manhattan, Riley.
Harry N. Lamme,	Hiawatha, Brown.
Chester A. Latham,	Wichita, Sedgwick.
Alfred C. LeBaron,	Circleville, Pickaway Co., <i>Ohio</i> .
William C. Lee,	Manhattan, Riley.
Cora M. Linden,	Atchison, Atchison.
E. Ada Little,	Manhattan, Riley.
Harry E. Louthan,	Simpson, Mitchell.
John Lithi,	Alida, Davis.
Lizzie Markley,	Minneapolis, Ottawa.
Abbie Marlatt,	Manhattan, Riley.
Frederick A. Marlatt,	Manhattan, Riley.
Mary E. Marshall,	Manhattan, Riley.
John M. Marshall,	Manhattan, Riley.
Warren Marshall,	Zeandale, Riley.
William E. Martin,	Ogden, Riley.
Thomas McHenry,	Bull City, Osborne.
Thomas McKee,	Havensville, Pottawatomie.
George B. Mechem,	Mankato, Jewell.
Mary Mechem,	Mankato, Jewell.
William H. Mechem,	Mankato, Jewell.
Montgomery K. Miller,	Howard, Elk.
Union Millspaugh,	Winfield, Cowley.
Ella M. Moody,	Junction City, Davis.
William C. Moore,	Minneapolis, Ottawa.
James A. Morrow,	Moline, Elk.
Frederic Morse,	Milo, Lincoln.
Charles A. Murphy,	Tabor, Clay.

Barton Needham,	. . . . .	Lane, Franklin.
Dow D. Nellis,	. . . . .	Dunkirk, <i>New York</i> .
Georgia A. Nesbit,	. . . . .	Bazaar, Chase.
Albert Nider,	. . . . .	Waterville, Marshall.
Mary Noland,	. . . . .	Manhattan, Riley.
Henry W. Noyes,	. . . . .	Fort Union, <i>New Mexico</i> .
Maria B. Noyes,	. . . . .	Pavilion, Wabaunsee.
William B. O'Malley,	. . . . .	Hanover, Washington.
John J. Osborne,	. . . . .	Galva, McPherson.
Edward S. Palmer,	. . . . .	Manhattan, Riley.
Louis B. Parish,	. . . . .	Lamoine, Riley.
Frank L. Parker,	. . . . .	Hutchinson, Reno.
Andrew W. Patterson,	. . . . .	Granby, Newton Co., <i>Missouri</i> .
Walter Peckham,	. . . . .	Manhattan, Riley.
Maude A. Perkins,	. . . . .	Beloit, Mitchell.
Edward H. Perry,	. . . . .	Manhattan, Riley.
Albert S. Phillips,	. . . . .	Barnsville, Belmont Co., <i>Ohio</i> .
Benjamin F. Powers,	. . . . .	Manhattan, Riley.
Malvina E. Pratt,	. . . . .	Silver Lake, Shawnee.
Minnie C. Rand,	. . . . .	Wabaunsee, Wabaunsee.
Otis T. Rayn,	. . . . .	Garnett, Anderson.
Mary B. Reed,	. . . . .	Lincolnville, Marion.
Mattie Reed,	. . . . .	St. Clere, Pottawatomie.
Minnie Reed,	. . . . .	St. Clere, Pottawatomie.
Thomas G. Rees,	. . . . .	Bala, Riley.
Dora Ridenour,	. . . . .	Seneca, Nemaha.
Charles E. Richardson,	. . . . .	Leavenworth, Leavenworth.
Frank C. Rhodes,	. . . . .	Kansas City, <i>Missouri</i> .
David G. Robertson,	. . . . .	Mt. Ayr, Osborne.
Frederick J. Rogers,	. . . . .	Burton, Harvey.
Rachel M. Rodgers,	. . . . .	Tabor, Clay.
Sarah E. Rodgers,	. . . . .	Tabor, Clay.
Alice M. Rolander,	. . . . .	Mariadahl, Pottawatomie.
George W. Scott,	. . . . .	Churchill, Ottawa.
Frederick C. Sears,	. . . . .	Churchill, Ottawa.
Florine Secret,	. . . . .	Randolph, Riley.
Nora Shartel,	. . . . .	Fulda, Chautauqua.
Charles H. Sheffield,	. . . . .	Glasco, Cloud.
Ernest C. Sikes,	. . . . .	Vienna, Pottawatomie.
John Simpson,	. . . . .	Aroma, Dickinson.
Edward O. Sisson,	. . . . .	Manhattan, Riley.
Carlos E. Smith,	. . . . .	Plowboy, Shawnee.
Jennie Smith,	. . . . .	St. Clere, Pottawatomie.
William T. Smith,	. . . . .	Lansing, Leavenworth.
Henry S. Speer,	. . . . .	Lyndon, Osage.
Louis R. Spohr,	. . . . .	Manhattan, Riley.
Nellie Stevens,	. . . . .	Carbondale, Osage.
Sophronia Stevens,	. . . . .	Carbondale, Osage.

Charles J. Stewart,	Silver Lake, Shawnee.
Emma E. Stewart,	Manhattan, Riley.
Flora Stewart,	Speareville, Ford.
William Stewart,	Manhattan, Riley.
Benjamin B. Stiles,	Pavilion, Wabaunsee.
James Taylor,	Wakefield, Clay.
John H. Taylor,	Elmdale, Chase.
Harry O. Tennant,	Manhattan, Riley.
Jennie H. Thomas,	Wabaunsee, Wabaunsee.
George N. Thompson,	Belmond, Wright Co., Iowa.
John F. Thompson,	Belmond, Wright Co., Iowa.
Herman W. Ties,	Haysville, Sedgwick.
Henry Toburen,	Randolph, Riley.
Thomas J. Towery,	Roswell, Lincoln Co., New Mexico.
Ella S. Walden,	Manhattan, Riley.
William S. Walden,	Manhattan, Riley.
Nancy J. Walker,	White City, Morris.
George W. Walling,	Elk Falls, Elk.
George W. Waters,	Junction City, Davis.
Lawrence A. Waters,	Junction City, Davis.
Lucy Waters,	Vinton, Riley.
Sherman Waters,	Vinton, Riley.
Silas A. Waters,	Junction City, Davis.
Willis G. Weaver,	Wabaunsee, Wabaunsee.
Nimrod S. Welton,	Rantoul, Franklin.
Beatrice B. White,	Manhattan, Riley.
Bertha E. Whitney,	Manhattan, Riley.
William A. Wickard,	Ottawa, Franklin.
Thomas A. Wilkerson,	North Cedar, Jackson.
Laura B. Willey,	Tehama, Cherokee.
David T. Williams,	Bala, Riley.
Henry R. Williams,	Aroma, Dickinson.
Thomas Williams,	Bala, Riley.
Walter Winder,	Manhattan, Riley.
Grant Winne,	Newton, Harvey.
William J. Wirt,	Parsons, Labette.
Willis M. Wright,	Manhattan, Riley.
Jeannette Wyland,	Jewell City, Jewell.
J. Walter Wyland,	Jewell City, Jewell.
Cameron C. Wylie,	Tabor, Clay.
Edward L. Young,	Manhattan, Riley.
James P. Zimmerman,	Troy, Doniphan.

SPECIAL COURSE.

Henry M. Cottrell, *Chemistry*, Wabaunsee, Wabaunsee.
 Silas C. Mason, *Botany and Zoology*, . . Delphos, Ottawa.
 Charles L. Marlatt, *Botany and Zoology*, . . Manhattan, Riley.
 Thomas W. Miller, *Pharmacy*, . . Peach Grove, Clay.

NUMBER OF STUDENTS.

Classes:—	Gentlemen.	Ladies.	Total.
Fourth Year,	7	5	12
Third Year,	19	11	30
Second Year,	42	18	60
First Year,	161	80	241
Special Course,	4	—	4
Total,	233	114	347
From 50 counties of Kansas,			320
From 18 other States,			27

Average age of students 18.81 years.

TERMS AND VACATIONS.

FALL TERM, 1883.

Wednesday, September 12th.—Examination for admission at 9 A. m.
 Thursday, September 13th.—College year begins.
 Friday, October 19th, and November 16th.—Monthly examinations.
 Thursday, December 20th.—Annual exhibition of Alpha Beta Society.
 Thursday and Friday, December 20th and 21st.—Examinations at close of Fall Term.
 December 22d to January 7th.—Winter vacation.

WINTER TERM, 1884.

Monday, January 7th.—Examination for admission at 9 A. m.
 Tuesday, January 8th.—Winter Term begins.
 Friday, February 15th.—Monthly examinations.
 Thursday, March 27th.—Annual exhibition of Webster Society.
 Thursday and Friday, March 27th and 28th.—Examinations at close of Winter Term.

SPRING TERM, 1884.

Monday, March 31st.—Spring Term begins.
 Friday, May 2d.—Monthly examinations.
 Monday and Tuesday, June 9th and 10th.—Examinations at close of year.
 June 8th to 11th.—Exercises of Commencement week.
 Wednesday, June 11th, 10 A. m.—Commencement.
 June 12th to September 10th.—Summer vacation.

FALL TERM, 1884.

Thursday, September 10th.—Examination for admission at 9 A. m.
 Friday, September 11th.—College year begins.

Objects and Methods.

ENDOWMENT.

An act of Congress, approved July 2d, 1862, gave to each State public lands to the amount of 30,000 acres for each of the Senators and Representatives in Congress according to the census of 1860, for the "endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, *** in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

Under this act, the State of Kansas received 82,313.53 acres of land, and, in 1863, established the State Agricultural College, by endowing with these lands Bluemont College, which had been erected near Manhattan under the auspices of the M. E. Church, but was presented to the State for the purpose named in the act of Congress. Of these lands, 71,795.22 acres are now sold, giving a fund of \$403,177.07, which is by law invested in bonds, the interest alone being used for current expenses of the College. There remain unsold 10,518.81 acres of land, lying in Riley, Dickinson, Washington and Marshall counties, appraised at over \$100,000.

In 1873 the College was reorganized upon a thoroughly industrial basis, with prominence given to practical agriculture and related sciences; and, in 1875, the furniture and apparatus of the College were moved to buildings upon the farm of 155 acres, one mile nearer the city of Manhattan. On this fine location, the State has erected buildings valued at \$90,000, of which a description is given elsewhere. The furniture, stock and other illustrative apparatus are valued at over \$35,000.

OBJECTS.

This College now proposes to carry out the objects of its endowment in several ways.

First, it gives a substantial education to men and women. Such general information and discipline of mind and character as help to make intelligent and useful citizens are offered in all its departments, while

the students are kept in sympathy with the callings of the people.

Second, it teaches the sciences applied to the various industries of farm, shops and home. Chemistry, botany, entomology, zoölogy and mechanics are made prominent means of education to quick observation and accurate judgment. Careful study of the minerals, plants and animals themselves illustrates and fixes the daily lesson. At the same time, lessons in agriculture and horticulture show the application of science; and both are enforced by actual experiment.

Third, it trains in the elements of the arts themselves, and imparts such skill as to make the hands ready instruments of thoughtful brains. The drill of the shops, gardens and farm is made a part of a general education to usefulness, and insures a means of living to all who make good use of it. At the same time, it preserves habits of industry and manual exertion, and cultivates a taste for rural and domestic pursuits.

Fourth, it strives to increase our experimental knowledge of agriculture and horticulture. So far as means and circumstances permit, experiments are undertaken with a view to more definite results than ordinary experience can give. By this method, the students themselves are trained to a more accurate observation and judgment in these practical tests of principles in farming.

Fifth, it seeks to disseminate such practical truths as have stood the test of scientific inquiry. For this purpose it publishes the weekly *Industrialist*; and its officers share in the debates and consultations of farmers and horticulturists throughout the State.

Each winter a series of six Farmers' Institutes is held in as many different counties of the State. In these the Faculty share with the people in lectures, essays and discussions upon topics of most interest to farmers.

COURSES OF STUDY.

The necessity for so adjusting various branches of a course of study that there shall be as little waste as possible in acquiring both information and discipline is felt by every teacher. Such a course is not designed to be absolutely inflexible, but to guide the judgment into some definite line of progress from which no mere whim shall turn a student aside.

Each student is expected to take three studies besides one hour's practice in an industrial art; and variation from this rule can be made only with the consent of the Faculty.

Parallel courses are offered to both sexes, with such differences as their necessities seem to call for. The following gives the general scope of the two; but fuller explanations are found under OUTLINE OF INSTRUCTION:—

FIRST YEAR.

FALL TERM.—Arithmetic.
English Analysis.
Geometrical Drawing.
Industrial.

WINTER TERM.—Book-keeping.
English Structure.
United States History.
Industrial.

SPRING TERM.—Algebra.
English Composition.
Botany with Drawing.
Industrial (Carpentry).

SECOND YEAR.

FALL TERM.—Algebra completed.
Elementary Chemistry.
Horticulture.
Fourteen lectures in Military Science.
Industrial.

WINTER TERM.—Geometry.
Agriculture or Household Economy.
Organic Chemistry and Mineralogy.
Twelve lectures in Military Science.
Industrial.

SPRING TERM.—Geometry completed, Drawing.
Entomology and Anatomy.
Analytical Chemistry.
Industrial (Farm and Garden or Dairy).

THIRD YEAR.

FALL TERM.—Trigonometry and Surveying.
Physiology.
General History.
Industrial (Farm and Garden).

WINTER TERM.—Mechanics.
Agricultural Chemistry.
Rhetoric.
Industrial.

SPRING TERM.—Civil Engineering with Drawing or Hygiene.
Chemical Physics.
English Literature.
Industrial.

FOURTH YEAR.

FALL TERM.—Agriculture or Literature.
Meteorology.

Psychology.
Industrial.

WINTER TERM.—Logic, Deductive and Inductive.
Zoölogy.
Structural Botany.
Industrial.

SPRING TERM.—Geology.
United States Constitution.
Political Economy.
Industrial.

CLASS HOURS, 1883-4.

SRH	FIRST YEAR.	SECOND YEAR.	THIRD YEAR.	FOURTH YEAR.
FALL TERM, 14 WEEKS.	I. Arithmetic.	Algebra.	Industrials.	Agriculture. Literature.
	II. Geometrical Drawing.	Horticulture.	Physiology.	Meteorology.
	III. English Analysis.	Industrials.	General History.	Psychology.
	IV. Industrials.	Inorganic Chemistry.	Trigonometry and Surveying.	Industrials.
	V.	Chemical practice once a week. Military Science.		
WINTER TERM, 12 WEEKS.	I. Book-keeping.	Geometry.	Agricultural Chemistry.	Zoölogy.
	II.	Organic Chemistry 6 weeks. Mineralogy.	Industrials.	Logic.
	III. Industrials.	Military Science 6 weeks. Blow-pipe Analysis.	Rhetoric.	Industrials.
	IV. U. S. History.	Household Economy. Agriculture.	Mechanics.	Structural Botany.
	V. English Structure.	Industrials.		
SPRING TERM, 11 WEEKS.	I. Algebra.	Entomology 7 weeks. Anatomy 3 weeks.	English Literature.	Geology.
	II. Botany.	Geometry with Drawing.	Chemical Physics.	Political Economy.
	III. Industrials.	Analytical Chemistry.	Industrials.	U. S. Constitution.
	IV. Drawing 3 times a week.	Analytical Chemistry.	Civil Engineering. Hygiene.	Industrials.
	V. Composition.	Industrials.	Drawing twice a week.	

All students meet in Chapel at half past eight o'clock each morning, except Saturday and Sunday. The time from 8:30 A. M. to 1 P. M. is divided into five "hours," as above; and a system of electric bells calls the classes in all the buildings at once. Military Drill on Monday, Wednesday and Friday of each week at the fifth hour. Public exercises or class rhetorical exercises on every Friday afternoon, at 1:30.

Closely adjusted to the course of study is industrial training in several of the arts, to which each student is required to devote at least one hour a day. Among these lines of training, each student may select, with the approval of the Faculty, except in terms when special industrials are required. Young men may have Agriculture, Horticulture, Carpentry, Cabinet-making, Iron-work, Printing or Telegraphy. Young women may take Sewing, Printing, Telegraphy or Music.

Military Drill is optional.

SPECIAL COURSES.—Persons of suitable age and advancement, who desire to pursue such branches of study as are most directly related to agriculture or other industries, may select such studies, under the advice of the Faculty. Assaying and Pharmaceutical Chemistry may be provided for by special arrangement, when students are qualified to pursue them.

POST-GRADUATE COURSES.—Arrangements can be made for advanced study in the several departments at any time. Special opportunities for investigation and research will be afforded to resident graduates.

DEGREES.—The degree of Bachelor of Science is conferred upon students who complete the full course of four years and sustain all the examinations.

The degree of Master of Science is conferred upon graduates of three years' standing who give evidence of advancement in the application of science to the arts of practical life, and present an acceptable thesis upon some topic assigned by the Faculty. A copy of each thesis is to be deposited at the College.

OUTLINE OF INSTRUCTION.

AGRICULTURE.—*Second Year.*—History of agriculture, showing the successive steps by which the art has attained its present position. History and characteristics of breeds; their adaptation to the varying conditions of soil, climate and situation; study of the forms of animals, as shown by the different breeds belonging to the College; the relation of stock raising to general farming. Cultivation of hoed crops; management of corn and roots with reference to stock feeding, and the growth of the finer grains. The growth of the “tame grasses” in Kansas; the best sorts for the State, and their management, as shown by experience on the College farm and elsewhere. Implements of simple tillage; mechanical principles involved in their construction. Application of labor. Draught; different adjustments, as affecting draught; use of the dynamometer. Plows for soil and subsoil. Drainage; soils that need draining; how to lay out a system of drains.

Fourth Year.—General principles governing the development of domestic animals. The laws of hereditary disease,—of normal, abnormal and acquired characters; atavism; correlation in the development of parts; in-and-in breeding and cross breeding; influences affecting fecundity. The selection and arrangement of the farm with reference to the system to be pursued. Rotation of crops; general advantages of a rotation; the best rotation for the distribution of labor, production of manure, and extermination of weeds. Planning farm buildings,—barns, piggeries and stables. Manure,—how best housed and applied; composting; commercial fertilizers. Agricultural experiments; field and feeding experiments. Stock feeding and meat production; stall feeding; soiling. In this, Miles' Stock Breeding is supplemented by a course of lectures.

Books of Reference.—Journal of the Royal Agricultural Society of England, Morton's Cyclopedie, Low's Practical Agriculture and Domesticated Animals, Fleming's Veterinary Obstetrics, Ribot on Heredity, Farmers' Calendar, Allen's American Farm-book, The Complete Grazier, Stephens' Book of the Farm, Thomas' Farm Implements, Waring's Draining for Profit and Health, the reports of our own and other State boards of agriculture, and Shorthorn, Scotch Polled, Jersey and Berkshire Herd-books.

HORTICULTURE.—It is the aim to teach this art from a botanical basis. The student applies his knowledge of the prime facts in botanical physiology to the various operations of the nursery, orchard and farm. Barry's Fruit Garden is used, supplemented by a series of lectures upon the following topics, among others: The scope of Horticulture. General principles of propagation,—by buds, by seeds. Production of improved varieties,—by careful selection of seeds, by interfertilization of known kinds. Perpetuation of valuable sorts of fruits by bud propagation.—budding, grafting, layering, etc. The important points in nursery manipulation. The orchard; conditions of site, soil, exposure, elevation. Special treatment of different kinds of fruit trees. Pruning. Gathering and storing fruits. Small-fruit culture; lists of varieties suitable for Kansas planting. Vegetable garden; selection and preservation of seeds; planting and transplanting. The management and use of the hot-bed and cold-frame. Forest plantations. Wind-breaks. Hedges. Trees and shrubs for ornamental planting.

Books of Reference.—The horticultural works of Downing, Warder, Fuller, Thomas, Loudon, Henderson, and other standard authorities. The Horticultural Reports of the States of Kansas, Michigan, Illinois, and others. In Landscape Gardening, the works of Downing, Weidenmann, Kemp.

BOTANY.—During the course, two terms are given to the study of Botany.

Elementary Botany.—In the spring term, first year, the student is familiarized with the basis and aims of botanical classification to a suffi-

cient degree to enable him to appreciate differences and resemblances in the plant kingdom, and is made acquainted with the salient points in plant physiology. Gray's Manual and Lessons is the text-book.

Advanced, or Higher, Botany.—In the spring term, fourth year, the intimate structure of plants, a more detailed study of plant physiology (in the germination of seed, the growth of cellular substance, and the fertilization of the ovule), variation, the improvement of varieties, parasitic fungi, are among the topics studied. The text-book used in this part of the course is Bessey's Botany. This study is made more practical by the use of the compound microscopes belonging to the Department, of which there are twelve, with suitable accessories for a high grade of work.

Although it is in a large degree the aim of this course in Botany to furnish a foundation for the study of applied botany in agriculture and horticulture, the advantages of systematic observation and original investigation are kept in view, and the student anticipates the use of the text-book by the use of his eye and brain,—observing and comparing seeds, leaves, stems, flowers, and other portions of plants, keeping notes of his observations for presentation in the class. This plan is followed through the course, with each new topic. A good herbarium, a well-stocked greenhouse, and a series of charts are used as means of illustration.

Books of Reference.—A few well-selected books, including the works of Gray, Loudon, Darwin, Cooke, Berkeley, Lesquereux, Eaton, Sachs, Sullivant, Paxton, and others of note.

CHEMISTRY.—*Inorganic Chemistry*, which occupies fourteen weeks of the second year, includes a consideration of chemical forces and of the laws of chemical combination, with nomenclature and formulæ, and a careful study of the history, manufacture, physical, chemical and physiological properties, tests and uses, of the various elements and their compounds. Especial attention is given to those substances having extended application in the arts. In addition to the usual lecture-room experiments, the student repeats, as far as practicable, all this experimental work at his private work-table.

Organic Chemistry comprises a six weeks' course of lectures upon the preparation and properties of those organic substances most useful to man.

In *Chemical Analysis*, each student has his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. His work includes the analysis of more or less complex mixtures of chemicals, minerals, ores, soils, mineral waters, well waters, etc. The time given to this work is two hours daily for eleven weeks. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.—This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composi-

tion of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations,—such as plowing, fallowing, draining; chemistry of plant growth. Text-book, Johnson's "How Crops Feed."

Books of Reference.—In general chemistry, Roscoe, Schorlemmer, Miller, Storer, Cooke, Strecker. In applied chemistry, Paul & Payen, Muspratt and Watt's Dictionary. In Chemical Analysis, Fresenius, Thorpe, Blythe, Prescott and Wanklyn; Sutton's Volumetric Analysis, Crooke's Select Methods. Journal of the Royal Agricultural Society, Reports of experiment stations, current scientific journals.

MINERALOGY AND GEOLOGY.—For six weeks in the second year, two hours a day are given to mineralogy. This includes the study of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blow-pipe analysis forms an important part of the course, each student being required to identify and name a large series of minerals. Text-book, Dana's Mineralogy and Lithology.

A term's study in the fourth year gives a view of the causes which have produced geologic changes in the past, of the general arrangement of the earth's crust, and of special peculiarities of various strata. Attention is given to the formation of soils and deposits of valuable minerals, especially in Kansas.

Books of Reference.—The works of Dana and Le Conte, Geikie's and Plattner's Blow-pipe Analysis.

PHYSICS AND METEOROLOGY.—Two terms' work give an opportunity for experimental study of the laws of heat, light, electricity and magnetism, the constitution of the atmosphere, the measurement of temperature and humidity, atmospheric pressure. Text-books, Miller's Chemical Physics and Loomis' Meteorology. This course also includes a careful study of instruments and methods employed in taking meteorological observations.

Books of Reference.—The works of Deschanel, Ganot, Tyndall, Faraday, Helmholz, Grove and Gordon.

ANATOMY AND PHYSIOLOGY.—A full term's study of Physiology is preceded by a course of lectures on Anatomy. In this course, such consideration will be given to the form, structure and location of the different organs as is required for the proper comprehension of Physiology and Hygiene; and, in addition, the external form of animals, particularly the ox and horse, will be studied by the class as a preparation for the study of Stock breeding. The study of Physiology embraces a thorough consideration of the functions of the organs of the human body, and the relations these sustain to the conditions of health and disease. Among the principal topics discussed, these may be mentioned: Foods and digestion; assimilation; secretion and excretion; the circulation of the blood; the nervous system; the special senses; reproduction. Text-book, Martin's Human Body.

Books of Reference.—Dalton's Human Physiology, Carpenter's Treatise on Human Physiology, Flint's Physiology of Man, Gray's Anatomy.

SPECIAL HYGIENE.—To the ladies of the third year, a course of daily lectures is given by the Superintendent of the sewing room, upon the laws of life and health. The course extends over a period of ten weeks, and covers questions pertaining to personal health and the health of the household,—such as food, air, exercise, clothing, temperature of rooms, and care of sick-room.

Books of Reference.—Health and its Conditions (Hinton), Lungs (Dio Lewis), Hand-book of Nursing, Dictionary of Hygiene (Blythe & Tardien).

ENTOMOLOGY.—This science is studied with especial reference to its economic relations with agriculture and horticulture. A brief course in the principles of classification is followed by a more extended study of the life-history of beneficial and injurious insects, and means of encouragement of one and the control of the other. Here, as in botany, the student is led to form a basis for the study by his own observations. The instruction is presented in the form of lectures. Illustrations are furnished from the individual collections of the students, and from the entomological collections belonging to the College. Charts and drawings from nature are used to illustrate points of value in classification.

Books of Reference.—Packard's Guide to the Study of Insects, Harris' Insects Injurious to Vegetation, Riley's Reports, LeBaron's Reports, Fitch's Reports, Thomas' Reports, Reports of the U. S. Entomologist, Transactions of the American Entomological Society, and others.

ZOOLOGY.—In this study, Packard's Zoölogy has been adopted as a text-book. The intention of the course is to familiarize the student with the characters of some type in each class, and then by comparative study, with the chief modifications of the type chosen. Especial attention is directed to comparative anatomy and physiology, as underlying all logical classification. A good collection of animals, birds, reptiles and fishes, both mounted and alcoholic, a small but rapidly increasing collection of invertebrates in alcohol, and a fine collection of conchological specimens, are among the means of illustration. Dissection and work with microscope accompany the study, so far as practicable.

Books of Reference.—A selection of standard works, including those of Agassiz, Huxley, Gegenbaur, Balfour, Foster, Darwin, Wallace, Packard, Coues, Baird, Jordan and others.

ARITHMETIC.—One term is given to a general review of Brooks' Union Arithmetic, the greater part of the time being spent on percentage and its applications. Accuracy and rapidity in computations are required; and, to those deficient in this respect, a thorough drill is given. Original problems form a prominent feature in the course.

BOOK-KEEPING.—Beginning with a simple cash account, Book-keeping is developed through all the principles of single and double entry. Considerable time is given to those forms best adapted to farm and business life. Each student provides a full set of blanks, and

keeps a regular set of books, in which accuracy of calculation and posting, and neatness of execution, are regarded as essential as correct understanding of the principles. No text-book is used, but all forms and problems are furnished in the class-room, and frequent reference is made to the standard works of Mayhew and Duff.

In addition to this term's work in Book-keeping, a course of fifteen lectures in Commercial Law is given.

ALGEBRA.—Algebra is studied two terms. The first is wholly given to the literal notation. The student is thoroughly drilled in the fundamental rules, as applied to whole, fractional and exponential quantities. The second term is devoted to the various forms of the equation, and its applications. The equation in its various forms,—simple, quadratic, radical, etc.,—is studied, as an instrument for solving the problems of practical life, in which quantity is an item; for demonstration of geometrical and trigonometrical theorems; and for the construction of formulas for the use of the engineer and artisan. Text-book, Wentworth's Algebra. Three things are aimed at in the course of Algebra: first, to train the pupil to methods of reasoning; second, to give facility in methods of operation; third, to secure expertness in the use of algebraic formulas.

Books of Reference.—Newcomb, Todhunter.

GEOMETRY.—Two terms are given to Geometry. In geometrical drawing, the student has already become familiar with geometrical forms and their construction. The first term is devoted to plane geometry. During the second term, solid and spherical geometry are studied in connection with technical drawing. Practical problems, involving the principles demonstrated, are given to the class. Text-book, Olney's Elements.

Books of Reference.—Chauvenet, Warren.

TRIGONOMETRY AND SURVEYING.—The principles of plane trigonometry, involved in mensuration and surveying, are first mastered. Surveying includes theory; adjustment and use of instruments; history and methods of U. S. Government surveys; areas of land; dividing land; retracing old land; platting; topographical surveying; railroad surveying; leveling,—section and cross section; computation of earth-work; field practice with transit, compass, chain, level and rod; drawing and ornamentation of plans and profiles. Text-book, Ray's Trigonometry and Surveying.

Books of Reference.—Gillespie, Reports of the U. S. Land Office.

MECHANICS AND ENGINEERING.—A careful consideration of the laws of motion and force, as exhibited in all kinds of machines and various phenomena of nature, occupies a single term. Another term is given to study of proper materials for buildings, their construction and durability; forms of roofs and bridges; care and use of machinery; and roads and road-making. Text-books, Peck's Mechanics, Mahan's Civil Engineering.

Books of Reference.—Rankin's Mechanics, Hand-books of Engineering.

DRAWING.—This study is required in four terms, of which two are in the first, one in the second, and one in the third year.

First Term.—Daily lessons. Definitions of lines and geometrical figures; judging and measuring lines and angles; construction of perpendiculars to given lines, of triangles, four-sided figures and polygons, of the circle and its secant lines, of ellipses, and various geometrical ornaments. Prof. Walter Smith's four books on geometrical drawing are used as text-books.

Second Term.—Freehand drawing three times a week. After the study of Nos. 3, 4 and 5 of Prof. Walter Smith's Text-books of Art Education (revised edition), drawing from nature is taken up. Leaves, flowers and fruits are taken as subjects, and placed in such positions that the perspective will not interfere seriously with a correct perception of form. Each student is required to finish a set of drawings. Lectures on principles and history of ornamentation are occasionally given.

Third Term.—Mechanical drawing twice a week. Projection of the straight line and the circle; use of drawing board, T-square, and water colors; principles of parallel and angular perspective; principles of topographical drawing.

Fourth Term.—Mechanical drawing twice a week. Principles of shades and shadows; intersections of geometrical solids; construction and development of the most common regular curves. Each student is required to draw and color a set of plans for a farm building, or give details of some farm machine.

Students who show special aptitude are encouraged to take drawing as a fourth study during any part of the course, and are given every opportunity to fit themselves for the draughting office, or for special art schools. The instruction includes an extended course in freehand drawing; shading; coloring; architectural and machine drawing.

Books of Reference.—Warren's Descriptive Geometry, Walter Smith's Manuals on Art Education, Woodward's National Architect, Guild's American Stair-builder, Andre's Hand-book of Topographical Drawing, Davies' Shades and Shadows, Smith's Cyclopedias of Architecture, Prang's Art Atlas, Lübbke's History of Art, Steinhauer's Room Decoration.

ENGLISH LANGUAGE AND LITERATURE.—*First Year.*—The study of English Grammar is made to serve directly in clear perception and correct expression. Such practice in analysis and parsing as may give the student a clear idea of the English sentence in all its parts is associated with daily exercise in expression and criticism. Under English Structure is included a careful study of words and their elements,—roots, stems, prefixes and suffixes. The most fruitful roots from the Saxon, Latin and Greek are learned, and also the laws governing the changes in the letters of roots in forming derivatives. Lectures are given upon the origin and history of the English language. At the same time, the daily exercises are made a means of training in exact

articulation, spelling, writing and the essentials of good reading. Text-books, Reed & Kellogg's Higher English Lessons, Swinton's Word Analysis.

Principles and methods in English Composition are then taken up, with David J. Hill's Elements of Rhetoric for a text-book. Numerous exercises and revisions familiarize the students with the essentials of neat, legible manuscript and clear, forcible expression.

Each class meets once every fortnight for drill in elocution and composition.

Third Year.—One term is given to the study of Higher Rhetoric, embracing the principles of clear explanation and convincing argument, as well as the outline of sound criticism, as presented in A. S. Hill's Rhetoric. This is followed by a term spent in the History of the English language and literature, with abundant illustrations from the best authors. Students are led in this way to appreciate the power of our mother-tongue, and at the same time to gain a slight acquaintance with the best thoughts of the world. Students are encouraged and directed in the use of the College Library, and are under constant oversight in the expression of their thoughts in writing. Original declaimations, carefully prepared and delivered before the students and Faculty, make a part of the drill in the higher classes.

In the course for young women, the first term of the fourth year gives training in the elements of criticism and good taste by some of the most famous works in English Literature.

Books of Reference.—Goold Brown's Grammar of English Grammars, Marsh's Lectures on the English Language, Whitney's Life and Growth of Language, De Vere's Studies in English, Latham's Hand-book of the English Language, Trench's Study of Words; Allibone's Dictionary of Authors, Hallam's Literature of Europe, W. D. Adams' Dictionary of English Literature, C. K. Adams' Manual of Historical Literature.

HISTORY AND POLITICAL ECONOMY.—Ridpath's United States History occupies a term's study in the first year; and special attention is given to the form and growth of the government under which we live. In the fourth year, a careful study of the Constitution of the United States, with Cooley's Principles of Constitutional Law as a text-book, is made to show the general principles of government, its means and methods, illustrated by historical references. A single term is given to Swinton's Outlines of General History, with especial emphasis upon the world's progress in science, literature and art.

The study of Political Economy, in a full term of the fourth year, gives a fair presentation of subjects connected with production, distribution and consumption of wealth. Chapin's Wayland's Elements is the text-book; but pains is taken to compare conflicting views, and point out sources of information on all sides of vexed questions, without bias or prejudice.

Books of Reference.—Bancroft's United States, Hume's, Macaulay's and Greene's England, Guizot's Civilization, and a good library in

general history. In Political Economy, works of Adam Smith, Mill, Fawcett, Cairnes, Walker, Bowen, Carey and Thompson.

HOUSEHOLD ECONOMY.—A series of lectures to the ladies of the second year continues through a term of twelve weeks. These cover the subjects of marketing, the chemistry of cooking, order, neatness and beauty in housekeeping, and comfort of a family. The class spend one hour each day in the kitchen laboratory, and cooking is done by each student.

LOGIC AND PHILOSOPHY.—The art of reasoning correctly is aided by a study of systematic logic, both deductive and inductive. Special prominence is given to methods for exact observation and experiment, and correct principles of classification. The previous researches and experience of the student are made to illustrate these principles. Text-book, Jevon's Elements of Logic.

A short course in Psychology gives the general principles of intellectual and moral philosophy. Perception, understanding, reason, feeling and volition are topics of explanation and analysis. Theories of right and wrong, and correct principles of action, are made the basis of a clear understanding of individual rights and duties. Hopkins' Outline Study of Man forms the basis of the course.

Books of Reference.—Mill's, Jevon's and Fowler's Logic, Bacon's Psychology, Porter's Human Intellect, Fairchild's Moral Philosophy, Cousin's The True, The Beautiful and The Good, and works of Spencer, Hamilton, and others.

INDUSTRIAL ARTS.—The training in these departments is designed to be systematic and complete in each, so that any student, following a single line diligently through a four-years' course, gains the essentials of a trade and a reasonable degree of skill. Those who wish only a general acquaintance with the arts can take shorter courses in several of them; but all are to select with definite purpose. In the established course, young men are required to take the regular term in the carpenter shop and on the farm and gardens whatever the industrial chosen. Young women are required to give one term of practice in the kitchen laboratory, and one in the dairy, though other industrials may occupy their course.

Dairying.—During the spring term, daily instruction and practice in the different branches of dairying is given the ladies of the second year by the Professor of Agriculture. A dairy, well equipped in modern appliances for the manufacture of butter and cheese, is connected with the Department of Household Economy. Here the regular dairy work is supplemented by a short course of lectures intended to explain the best practices in the arts of butter and cheese making, and to give the reasons therefor. The following topics cover, in the main, the instruction given the class: Influences affecting the quality and quantity of milk; butter making; the household and factory systems of cheese making; creameries; "deep" and "shallow" setting systems; packing and preserving butter.

Agriculture and Horticulture are required of young men as industrials during one term of the second year and one term of the third year. In these, practice is made to illustrate and emphasize the teaching, and covers essentially the same ground.

Carpentry, etc.—On entering the shops, all take the same first lessons in sawing, planing and dressing lumber, making mortises, tenons and joints, and in general use and care of tools. Later, one who chooses a trade is provided with work directly in the line chosen; while the farmer's course provides for general training in a great variety of operations, rather for ingenuity than skill. In the full course of a carpenter, special instructions are given in the whole range of work, from framing to stair building. Carpentry is required of young men during one term of the first year.

In iron work, instruction is given in ordinary work,—forging, filing, tempering, etc.

Printing.—Two courses are pursued in this art. In one the student is taught the implements or tools employed in typography, and how to use them; composition; imposition; correcting proof; technical terms; presses and their workings; and the general duties of a first-class workman. Everyone is encouraged in the study of the rise and progress of printing and related arts. Habits of accuracy and thoroughness are required in order to advancement. The second course of lessons, alternating with those in the first, embraces instruction in spelling, capitalization, syllabication, punctuation, proof-reading, preparation and criticism of essays, and such other work as will make the student accurate and expert in language. Wilson's Punctuation is the text-book; but much of the instruction is oral,—such as grows out of the every-day experience of the office.

Admirable drill is furnished by *The Industrialist* to all, but especially to those who take the full course. The printing which the departments of the College require gives to the advanced student a fair knowledge of the principles and practice of job work.

Books of Reference.—MacKellar's American Printer, Harpel's Typograph, Rounds' Printers' Cabinet, Ringwalt's Encyclopedia of Printing, De Vinne's The Invention of Printing, and standard works on grammar and rhetoric.

Telegraphy.—The course of training involves for beginners the characters that compose the alphabet, and combinations of these characters into words and sentences,—attention being paid to spelling and to short and precise expression in messages,—abbreviations, signals, forms of messages, train orders, reports, etc. To the more advanced is given regular line business,—as press reports, messages, cypher messages, and orders in all forms used by prominent telegraph companies, together with the necessary book-keeping, upon exact copies of blanks in actual use, thus giving the student an understanding of the work of an operator. A portion of the time is devoted to instruction in the use and management of lines, batteries, instruments, etc. The elementary

principles of electricity, magnetism and electro-magnetism, involved in telegraphy, are taught and illustrated by experiments. The more recent inventions relating to the art are discussed and explained. Pope's Hand-book of the telegraph is used as a text-book.

Books of Reference.—Prescott's Electric Telegraph, Morse's Telegraphic Apparatus, Culley's Telegraphy, and the works of Du Moncel, Clark & Sabine, Davis & Rae, Mandet, Jenkins, Harris, with the Journal of the Telegraph, and the Electrical Review.

Sewing.—Young ladies are taught in all ordinary forms of sewing with needle and machine, and in cutting, fitting and trimming dresses and other garments. A straight-line system of cutting and fitting is taught, and systems are furnished to students at wholesale rates. They may furnish materials, and work for their own advantage during the hour of practice, under the direction of the Superintendent.

Instrumental Music.—Provision is made for the teaching of music upon instruments of all sorts. A full course upon the organ or piano extends over four years, including harmony and composition; but students may take lessons for a single term if they choose. The College furnishes an instrument for daily practice, but the teacher depends upon his fees for income.

MILITARY TRAINING.—During the second year, a course of twenty-six lectures is given. Fourteen of these are designed to show what an army is for, its relation to the country, and, in a general way, to describe its organization and duties. The remaining twelve are devoted to the consideration of the campaigns of the Civil War of 1861-65.

To those who desire it, an opportunity is given to obtain a fair practice in the ordinary infantry drills, including bayonet exercise and target practice. Although drill is thus made optional, students are not allowed to take it for periods shorter than one term. To obtain a proper proficiency, however, one should take the tri-weekly drill for at least a year.

The College battalion is divided into companies, which are officered by students appointed by the Professor in charge with the approval of the President.

Arms and accoutrements are furnished by the Government, the students being required to keep such as they use in proper condition.

Books of Reference.—Wilhelm's Military Dictionary, Hamley's Operations of War, Upton's Armies of Asia and Europe.

LABOR.

Every encouragement is given to habits of daily manual labor during the College course. Only the one hour of daily practice in the industrial departments is required; but students are encouraged to make use of other opportunities for adding to their ability and means.

The College employs students, when possible, on the farm and in the gardens, shops and offices, paying wages varying in rate with accomplishment from eight to ten cents an hour.

All labor at the College is under the direction of the Superintendents of departments, and offers opportunity for increasing skill and efficiency. In regular weekly statements, the students are required to observe business forms and principles, showing from their daily account when and where the work was performed. A few students who have shown especial efficiency are employed during the summer vacation.

The shops and offices are open afternoons and Saturdays for the accommodation of skilled students in work for their own advantage. Everywhere the student who works, wins respect; and it is a matter of pride to earn one's way as far as possible.

GENERAL DUTIES AND PRIVILEGES.

General good conduct, such as becomes men and women anywhere, is expected of all. Every student is encouraged in the formation of sound character by both precept and example, and expected "upon honor" to maintain a good repute. Failure to do so is met by prompt dismissal. No other rules and regulations are announced.

Classes are in session every week-day except Saturday, and no student may be absent without excuse. Students enrolled in any term cannot honorably leave College before the close of the term, unless excused beforehand by the Faculty. A full and permanent record of attendance, scholarship and deportment shows to each student his standing in the College. After each monthly examination a report of advancement is made to parents; and any student, upon leaving College at the close of a term, may receive a certificate of standing.

Chapel exercises occupy fifteen minutes before the meeting of classes each morning, and unnecessary absence from them is noted in the grades.

Twice in each month the whole body of students gather for a lecture from some member of the Faculty, or for the rhetorical exercises of the third and fourth year classes. On alternate weeks all the classes meet at the same hour, in separate class rooms, for exercises in elocution and correct expression.

Instruction in Vocal Music, for beginners and for advanced students, is furnished at a very slight expense, under the direction of Prof. Platt, with whom all arrangements for entering these classes may be made.

There are two prosperous literary societies of fifteen years' standing. Both have libraries, and meet weekly in the Society Room. The *Alpha*

Beta is open to both sexes, and holds its meetings Friday afternoon. The *Webster* admits to membership gentlemen only, and meets on Saturday evening.

The Scientific Club, composed of members of the Faculty and students, meets in the Chemical Laboratory on the first Friday evening of each month.

Every Friday evening a students' prayer meeting is held in the College Society Room, led by a member of the Faculty. On the Sabbath students are expected to attend services at least once in the different churches of the city.

Occasionally during each term the College Hall is opened for a social gathering of Faculty and students, in which music, literary exercises and friendly greeting find place.

The Manhattan Horticultural Society meets monthly, and other farmers' associations occasionally, at the College, and the students have the privilege of attending these meetings.

MEANS OF ILLUSTRATION.

A WELL-PLANNED BARN for grain, hay, horses and cattle; and a pigery of six pens, with separate yards.

SHORTHORN, POLLED ANGUS, OR ABERDEEN, GALLOWAY AND JERSEY CATTLE; Berkshire and Essex swine.

FARM IMPLEMENTS of improved patterns.

ORCHARDS, containing 150 varieties of apples, 40 varieties of peaches, and several varieties each of pears, plums, cherries and apricots.

SMALL-FRUIT GARDEN, with 55 varieties of small fruits, including blackberries, raspberries, gooseberries, currants and strawberries; and vineyard with 50 varieties of grapes.

FOREST PLANTATION of twelve acres, containing twenty varieties of trees of from ten to fifteen years' growth.

ORNAMENTAL GROUNDS, set with a variety of evergreens and deciduous trees. Sample rows containing about 100 varieties of ornamental and useful shrubs and trees, labeled.

VEGETABLE GARDEN, with hot and cold frames and experimental beds. Practice rows for students' budding, grafting, cultivating and pruning.

A GREENHOUSE, with collection of native and exotic plants.

CHEMICAL LABORATORY, with seven rooms, fitted with tables and apparatus for a class of forty students; also, physical apparatus and meteorological instruments.

MATHEMATICAL INSTRUMENTS,—compasses, transits, levels, chains, for field work.

MODELS AND PATTERNS, for drawing, and charts for illustration.

ZOOLOGICAL MUSEUM, containing a typical collection of birds and mammals, mounted a cabinet of bird skins, eggs and nests, a good collection of reptiles and fishes in alcohol, a large series of land, fresh

water and marine shells, a good representation of the insects of this locality, and a small collection of invertebrates in alcohol.

BOTANICAL MUSEUM, containing a good herbarium, fairly representing the flora of the United States, a collection of native and foreign woods, seeds, nuts, dry fruits, a collection of abnormal wood growths, and a small but choice collection of living exotics.

MINERAL AND GEOLOGICAL cabinets, including collections of Professor Mudge; a representative collection of the ores of Colorado, New Mexico and Arizona.

COLLECTIONS of grains, grasses and forage plants.

CARPENTER SHOP, with separate benches and tools for twenty students in each class, besides lathes, mortising machine, and general chest of tools for fine work.

SHOP FOR IRON WORK, with forges, vices, drill, etc.

PRINTING OFFICE, with twenty-five pairs of cases, a good assortment of body and job type, a half-medium Gordon press, and a paper cutter.

TELEGRAPH OFFICE, with six miles of line, connecting thirty-two branch offices, and as many instruments, and a Remington type-writer.

SEWING ROOMS, with five machines, models and patterns.

KITCHEN LABORATORY, with range, cooking and table utensils, and dining-room furniture.

MUSIC ROOMS, with three pianos, two organs, and other instruments.

LIBRARY AND READING ROOM, containing about 4,000 volumes; 35 of the leading literary, agricultural and technical periodicals; about 250 other periodicals, including the principal daily and county papers from all parts of the State.

ARMORY, containing seventy-five stand of arms (breech-loading cadet rifles, caliber .45) with accoutrements.

EXPENSES.

Tuition is free; and no general fee for incidental or contingent expenses is charged. In a few special departments of instruction, the following payments are required in advance:—

In analytical chemistry, students pay \$3 a term for the chemicals and apparatus used in their laboratory practice and analysis.

In the printing office, young men, in their first year, pay \$3 a term for office expenses. Advanced students have the use of the office for the work performed during their industrial hours.

In telegraphy, young men pay \$8 a term for office expenses.

Young women are furnished both printing and telegraphy free of expense, these two offices, with the Sewing and Cooking Departments, being provided especially for their industrial training.

Lessons in instrumental music, two a week, are from \$10 to \$14 per term, according to its length; one a week, \$6 to \$8.40. One-half is to be paid to the instructor in charge with the first lesson, the other half at the middle of the term.

Vocal music is taught in classes at an average expense of \$1 a term.

The cost of text-books at the book-store is, for the first year, about \$4 a term; for the second year, \$2.75; for the third year, \$7.50; and for the fourth year, \$5.50.

Board and washing are not furnished by the College. Board can be procured in private families at from \$2.75 to \$4 per week. Some students board themselves at even less cost; and rooms for the purpose can be obtained at a rent of from \$1 to \$2.50 a month. Washing costs from \$0.50 to \$1 a dozen pieces.

Ordinary expenditures, aside from clothing and traveling expenses, range from \$75 to \$200 a year.

EARNINGS.

The labor of the students in the industrial departments is principally a part of their education, and is not paid for unless the student is employed—outside of required hours of labor—upon work for the profit of the College. Students are so employed upon the farm, in the gardens or the shops, and about the buildings. The labor is paid for at rates, varying with service rendered, from eight to ten cents an hour. The Superintendents strive to adjust their work to the necessities of students, and give them the preference in all tasks suitable for their employment. So far as practicable, the work of the shops and offices is turned to account for their benefit; and the increasing extent of the grounds and sample gardens brings more of such labor. The monthly pay roll for the past year ranges from \$111 to \$245.

Many students obtain work in the city or upon neighboring farms, and so pay part of their expenses. Students employed in the shops are allowed to work somewhat for their own profit, in the manufacture of articles for sale or use. In these ways a few students are able to earn their way through College. The amount so earned will vary according to the tact and zeal of the student. The majority must expect to provide by earnings outside of term-time, or from other sources, for the larger part of their expenses. The long summer vacation of three months offers opportunity for farm or other remunerative labor; and no one need despair of gaining an education if he has the ability to use his opportunities well.

GROUNDS AND BUILDINGS.

Two farms of 171 and 100 acres, with the stock, orchards, gardens, vineyards, forestry, and ornamental grounds, are used for experiment and illustration. All that is not strictly experimental is managed with a view to highest economy and profit.

On the larger of the farms, upon an elevation at the western limits of the city of Manhattan, and facing toward the city, are the College buildings. All are of the famed Manhattan limestone, and surrounded by pleasantly arranged and planted grounds, as shown in the view opposite the title page. The following description applies to them in order from left to right:—

College, of which the central building and north wing with connecting corridor are completed, and the south wing will be ready for use in September, 1884. This building contains now chapel, society room, offices, library, reading room and class rooms for Agriculture, Mathematics, English, History and Drawing. When fully completed, the building will be 130 by 250 feet in extreme dimensions, arranged in three distinct structures, with connecting corridors.

Chemical Laboratory, one story, 86 by 99 and 46 by 75 feet of floor space, in form of a cross. It contains eight rooms, occupied by the Department of Chemistry, Physics and Mineralogy, and the Printing office.

Mechanics' Hall, 39 by 103 feet, of two stories, occupied by the Carpenter shop and finishing room, Telegraph office, Music rooms, Sewing rooms and Kitchen Laboratory.

Horticultural Hall, 32 by 80 feet, one story and cellar, having cabinet room, class room, work room and storage, with greenhouse attached.

Dwelling of the President, not shown in view given.

Armory Hall, 46 by 96 feet, and two stories. It was originally designed for a barn, but is now used for the Armory and Drill room, the dwelling of the Farm Superintendent, and rooms for the Janitor and for a few students.

The barn is of stone, 48 by 96 feet, with side-hill basement stables, granary, tool room, etc.

The blacksmith shop, piggery, implement shed, and various out-buildings are of wood.

TERMS OF ADMISSION.

Applicants for admission at the beginning of the year, in September, must be at least fourteen years of age, and be able to pass a satisfactory examination in reading, spelling, writing, arithmetic into percentage, geography, and elements of English grammar. Those applying later in the term must show sufficient advancement to enter the classes already in progress. Every effort should be made to begin with the first day of the term, in order to advance with the class from the first.

Applicants of mature age who, for lack of advantages, are unable to pass the full examination may be received on special conditions.

Applicants for advanced standing in the course, must pass examination in all the previous studies of the class to be entered; but, if they have pursued such studies in other institutions of similar rank, they may receive credit for their standing in those institutions upon present-

ing a certificate from the proper officer, showing that their course has been equivalent to that given here.

The following questions in arithmetic may serve as a sample of the usual examinations for admission:—

1. What is arithmetic? notation? numeration?
2. Define dividend, divisor and quotient, and tell how to find each, the other two being given.
3. A speculator bought 1,200 bushels of corn at $56\frac{1}{4}$ cents a bushel. He sold $375\frac{1}{2}$ bushels at 60 cents a bushel. At what price must he sell the remainder to gain $\$168.67\frac{1}{2}$ on the whole?
4. A man had $225\frac{3}{8}$ dollars, and earned $\frac{1}{4}$ of $3\frac{1}{2}$ times $88\frac{1}{2}$ dollars more; having lost a part of his money, he had $186\frac{3}{8}$ dollars remaining. How much did he lose?
5. A farmer wishes to build a bin to contain 480 bushels of wheat. If he makes it 14 feet long and 8 feet 4 inches wide, how high must it be to contain the wheat?
6. A man having a hogshead of vinegar, sold $\frac{5}{8}$ of it. How many gallons, quarts, pints and gills remained?
7. Define percentage, base, rate, amount, and difference, and tell how to find each from two other given terms.
8. If by selling cloth at $\$0.75$ a yard I gain $18\frac{3}{4}$ per cent on the cost, how much must I advance upon this price to gain $31\frac{1}{4}$ per cent on the cost?
9. Loaned $\$257.80$ on March 1st, 1879. What was due July 23rd, 1882, interest at 7 per cent?

COLLEGE BUSINESS.

Loans upon school-district lands are to be obtained from the Loan Commissioner.

College Lands and all business connected with their sale are in charge of the Land Agent.

Bills against the College should be presented monthly, and, when audited, are paid from the office of the Treasurer, in Manhattan.

All Payments of principal and interest on account of bonds or land contracts must be made to the State Treasurer, at Topeka.

The Industrialist may be addressed through Prof. E. M. Shelton, Managing Editor. Subscriptions are received by Supt. Geo. F. Thompson.

Donations for the Library or Museums should be sent to the Librarian, or to Profs. Faillyer and Popenoe, of committee on Museums.

Questions, scientific or practical, concerning the different departments of study or work, may be addressed to the several Professors and Superintendents.

General information concerning the College and its work—studies, examinations, grades, boarding places, etc.—may be obtained at the office of the President.

CALENDAR.

1883.

SPRING TERM,—April 2d to June 13th.
June 13th, Commencement.

1883-4.

FALL TERM,—September 13th to December 21st.
WINTER TERM,—January 8th to March 28th.
SPRING TERM,—March 31st to June 11th.
June 11th, Commencement.

1884-5.

FALL TERM,—September 11th to December 19th.